

**Creating a Consortium to Increase minority and Low-Income Community Participation in Alternative Energy Development, Production and Management
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Abstract

America's desire for energy independence places a new demand on alternative fuel production. Additional interest and emphasis are being placed on alternatives such as solar, wind, biofuels and nuclear energy. The nuclear fuel production option brings a new look at risk and residual waste management for a number of communities that have traditionally remained outside the energy debate. With the Federal requirements for environmental justice and public participation in energy and environmental decision-making, proponents of alternative energy production facilities will find themselves participating in discussions of risk, production, storage and disposal of hazardous materials and waste matters with low income and minority members in communities where these facilities are located or wish to locate.

The fundamental principal of environmental justice is that all residents should have meaningful and intelligent participation in all aspects of environmental decision-making that could affect their community. Impacted communities must have the resources and ability to effectively marshal data and other information in order to make informed and intelligent decisions. Traditionally, many low-income and minority communities have lacked access to the required information, decision-makers and technical advisers to make informed decisions with respect to various risks that accompany alternative energy production, hazardous materials storage and nuclear waste management. In order to provide the necessary assistance to these communities, the Departments of Energy and Agriculture have teamed with others to create the Alternative Energy Consortium.

The Alternative Energy Consortium is a collaboration of non-profit organizations, Federal agencies, Historically Black Colleges and Universities and Minority Serving Institutions (HBCU/MSIs), and private sector corporations (energy industry specialists) designed to explore and develop opportunities that empower minorities to own and work in all aspects of the field of alternative energy. The Consortium's primary objectives are to find ways to:

- Include minorities in the development and ownership of infrastructure in the alternative energy industry

- Promote research and education programs to inform the public about risks and benefits of various forms of alternative energy
- Build a Mentor/Protégé Program between HBCU/MSIs and industry leaders to enhance minority participation in ownership and career success in alternative energy production and distribution.

The Consortium will work together to create a process whereby minorities and low-income individuals will be recruited, educated, and mentored to maximize alternative energy ownership and job opportunities. Industry specialists and government representatives will work with academicians and others to:

1. research areas and methods where minorities and rural communities can engage in the industry;
2. invest in minorities by serving as mentors to minority serving institutions by offering hands-on experience through apprenticeships;
3. work to identify ownership opportunities for minorities; and
4. work to develop legislation that supports economic development and participation for minorities and rural communities in the industry.

To accomplish this goal, the Consortium has set out a three-phase plan.

Phase I organized a meeting of professionals to discuss the concept, explore the fundamentals, identify key players, and draft next steps. The group took a critical look at the energy industry: 1) trends, 2) economics, 3) limited number of minorities; and 4) infrastructure. Through that process the group identified four areas that would greatly impact economic development for minorities and rural communities:

- I Energy
- II Broadband Communications
- III Education
- IV Labor Resources

Phase II presented a roundtable panel discussion that continued to refine the Consortium. The goal of these discussions is to produce a well-balanced Consortium committed to working together to produce effective solutions that bridge the gap between alternative energy and minorities and rural communities.

Phase III is the implementation stage that will put the consortium plans into action. This will include the Mentor/Protégé Program between HBCU/MSIs and industry leaders, and any additional actions that come from the Phase II roundtable discussion. Phase III will also include a panel discussion at the State of Environmental Justice in America 2008 Conference in Washington, DC in March, 2008.

The Consortium's work should facilitate the siting and management of alternative energy production facilities in communities that include a significant number of minority and/or

low income individuals. This effort should increase America's prospects for energy independence.

I. Introduction

The United States Department of Energy (DOE) is committed to promoting environmental justice and involving its stakeholders more directly in planning and decision-making processes for all allowable activities, including energy research and development. Through its environmental justice projects and other program activities, DOE provides communities and institutions with the opportunities and resources to effectively participate in all agency initiatives.

America's desire for energy independence places a new demand on alternative fuel production. Additional interest and emphasis are being placed on alternatives such as solar, wind, biofuels and nuclear energy. The nuclear fuel production option brings a new look at risk and residual waste management for a number of communities that have traditionally remained outside the energy debate. With the Federal requirements for environmental justice and public participation in energy and environmental decision-making, proponents of alternative energy production facilities will find themselves participating in discussions of risk, production, storage and disposal of hazardous materials and waste matters with low income and minority members in communities where these facilities are located or wish to locate.

The Energy Policy Act of 2005 sets forth a series of efforts designed to move America closer to energy independence and strengthen our energy security. Among other things, the Act promotes alternative sources of energy, encourages the expansion of nuclear energy, increases investments in science and technology, and advances research in the use of hydrogen and methane.

In a status report on the implementation of the Energy Policy Act of 2005 DOE stated "The Energy Policy Act of 2005 (EPAct) strategy advances important national goals and puts our country on a path to increased energy security. EPAct recognizes that we must diversify America's energy supply and reduce our dependence on foreign sources of energy; increase energy efficiency and conservation in our homes and businesses; improve the energy efficiency of our vehicles; and modernize our national energy infrastructure. To meet our objectives, America will rely on one of her greatest assets – the talent and ingenuity of our scientists and engineers."

Some of the goals and activities that are being planned to meet future energy needs are:

- Developing new biorefineries
- Producing energy from wind, solar, biomass and hydroelectric sources
- Establishing the Global Nuclear Energy Partnership (GNEP)

- Funding research to support advanced reactor technologies
- Expanding the availability of power from clean coal technologies
- Advancing methane hydrate research
- Providing additional funding for biofuels research

Of equal importance to the diversity of energy supply is the diversity of the workforce that will produce the resources to meet our future energy needs.

The United State Department of Agriculture's (USDA) role in our nation's energy strategy is significant. The FY 2008 budget requests a program level of \$397 million across USDA for bioenergy and renewable energy programs. These activities include commercialization, research and development, education and outreach, energy efficiency and conservation. The Agricultural Research Services; Cooperative State Research, Education and Extension Service; Forest Service; Economic Research Service; National Resources Conservation Service; Office of the Chief Economist; and Rural Development all have activities in these areas.

Agriculture has long been a major consumer of energy. It has more recently become a major producer as well. With oil at \$100 a barrel and expected to remain high, emerging technologies in both energy conservation and renewable energy production offer significant opportunities for higher profits, investment jobs, and wealth creation in rural America. This is a new era for America's farmers, ranchers and rural communities as they seize this moment when opportunity meets need. As the agency with lead responsibility for rural development issues, USDA has a major role to play in bringing these new technologies to market.

The progress that is being made to efficiently grow "barrels from bushel" is one of the most impressive developments of our time. U.S. farm and forest lands could supply, on a sustainable basis, enough agricultural material to greatly reduce our dependence on foreign oil. There are already more than 101 ethanol plants in operation and another 39 or more plants under construction, which is leading some to call the promise of biofuels a gold rush for rural America. Ethanol is just one type of renewable energy being developed. Animal waste is being turned into methane gas, which is used to power generators. Biomass is being used to create fuels, to generate electric power, and to replace petroleum-based products such as plastics and chemicals. These techniques will allow us to reduce pollution.

Renewable Energy and Energy Efficiency represent a new and enormous opportunity for rural America. Rural America occupies a large portion of the Nation's landmass and population. Much of the rural America's economy is based on agricultural producers and rural small businesses. Most of the Nation's renewable energy resources are in rural

areas. New crops, energy in the form of electricity, bio-diesel, hydrogen and ethanol will create new and opportunities for rural America. Renewable energy technologies such as anaerobic digesters will assist dairies in handling their manure issues and create a source of revenue from a cost. Wind energy can be used for on site and can be sold to create a source of cash income year after year. Solar energy can provide energy in areas where it is costly to connect to the grid and help reduce demand charges for rural small business. Energy efficiency will reduce costs of operation conserving cash previously need to pay for energy.

Rural areas will able benefit through the creation of high quality jobs, overall economic development, the retention of capital and the creation of new sources of income. USDA's activities are, however, part of a much broader effort. Renewable energy is an extraordinary opportunity – both for the nation as a whole and especially for rural America, because renewable energy is largely rural energy. USDA's role in national energy policy is in fact longstanding and varied. USDA offers numerous programs that will provide access to low cost capital needed to make farmers, ranchers and small rural businesses competitive with large renewable energy develops and in the overall energy markets.

There are numerous other areas of interest and activity in USDA for alternative energy production and distribution. The goal of this effort is to expand opportunities for minority researchers, academic institutions and entrepreneurs in these USDA programs.

ENVIRONMENTAL JUSTICE AND ALTERNATIVE ENERGY PRODUCTION

Environmental Justice

The Environmental Protection Agency (EPA) defines environmental justice as “fair treatment and meaningful involvement of all people, regardless of race, ethnicity, culture, income, or education level with respect to development, implementation, and enforcement of environmental laws, regulations and policies.” Fair treatment means that racial, ethnic, or socioeconomic groups should not bear a disproportionate share of negative environmental consequences resulting from industrial, municipal, and commercial operations, or from the execution of federal, state, local laws, regulations and policies. EPA's definition of environmental justice further states that no population should suffer a disproportionate share of environmental burdens.

Environmental justice works best when vulnerable communities are able to care for themselves and can determine their own environmental fate. Environmental justice works on the concept that a community that is environmentally literate and is active in environmental decision-making is the best source for waste management and environmental protection. In those cases where the community lacks environmental knowledge or access to trusted technical assistance, it is incumbent on their government to provide the resources to guarantee the community environmental protection.

The fundamental principal of environmental justice is that all residents should have meaningful and intelligent participation in all aspects of environmental decision-making that could affect their community. Impacted communities must have the resources and ability to effectively marshal data and other information in order to make informed and intelligent decisions. Traditionally, many low-income and minority communities have lacked access to the required information, decision-makers and technical advisers to make informed decisions with respect to various risks that accompany alternative energy production, hazardous materials storage and nuclear waste management. In order to provide the necessary assistance to these communities, the Departments of Energy and Agriculture have teamed with others to create the Alternative Energy Consortium.

Since environmental justice means that no population should suffer a disproportionate share of environmental burdens, it logically follows that no population should experience less than its fair share of environmental benefits. That is, as production possibilities turn to more environmentally friendly sources of energy from non-traditional sources, the benefits of such possibilities, when supported by public sources should be shared by all populations.

The Alternative Energy Consortium

The Alternative Energy Consortium (Consortium) is a collaboration of non-profit organizations, federal agencies, Historically Black Colleges and Universities and Minority Serving Institutions (HBCU/MSIs), and private sector corporations (energy industry specialists) designed to explore and develop opportunities that empower minorities to own and work in all aspects of the field of alternative energy. The Consortium's primary objectives are to find ways to:

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- Build a Mentor/Protégé Program between HBCU/MSIs and industry leaders to enhance minority participation in ownership and career success in alternative energy

The Consortium will work together to create a process whereby minorities and low-income individuals will be recruited, educated, and mentored to maximize alternative energy ownership and job opportunities. Industry specialists and government representatives will work with academicians to:

1. research areas and methods where minorities and rural communities can engage in the industry;
2. invest in minorities by serving as mentors to minority serving institutions by offering hands-on experience through apprenticeships;

3. assist in identifying ownership opportunities for minorities; and
4. assist in developing and promoting legislation that supports economic development and participation for minorities and rural communities in the industry.

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- I Energy
- II Broadband Communications
- III Education
- IV Workforce Development

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Phase III is the implementation stage that will put the consortium plans into action. This will include the Mentor/Protégé Program between HBCU/MSIs and industry leaders, and any additional actions that come from the Phase II roundtable discussion. Phase III will also include a panel discussion at the State of Environmental Justice in America 2008 Conference in Washington, DC in March, 2008.

The Consortium's work should facilitate the siting and management of alternative energy production facilities in communities that include a significant number of minority and/or low income individuals. This effort should increase America's prospects for energy independence.

The Consortium is built around Historically Black Colleges and Universities with the Department of Energy's Dr. Samuel P. Massie Chairs of Excellences (Massie Chairs) as the center. It will focus on research, applications, entrepreneurship, employment and other facets of alternative energy production and management. This should present new opportunities for the Massie Chair institutions and industry members wishing to associate with faculty and student talent at these schools.

THE MASSIE CHAIRS ENERGY RESEARCH TEAM

The Dr. Samuel B. Massie Chairs of Excellence Program is a team of world-class scholars, researchers and educators, who advance research, enhance academics, promote partnerships, and effect outreach in the environmental sciences.

The Massie Chairs of Excellence Program is designed to assist its member institutions in producing top-level graduates in environmental disciplines and to produce groundbreaking environmental research. Specifically, the Program has established a team of environmental specialists led by world-class scholars, researchers and educators who:

- conduct cutting-edge scientific research and technical investigations
- promote interaction, collaboration and partnerships between the private sector, federal agencies, major research institutions and other HBCUs
- lecture on new frontiers in science and technology
- serve as chief scientists/engineers providing expert advice to the public and private sectors
- mentor young investigators and act as role models for engineering students.

The Chairs, selected from a number of highly qualified individuals, have national and international reputations in engineering, science and technology. Their professional experience includes work in the public and private sectors, as well as in academia. Our current chairs are:

University	Chair
Florida A&M University	Dr Ben Wang
Hampton University	Dr. Adeyinka A. Adeyi (Acting)
Howard University	Dr. James H. Johnson, Jr.
Morgan State University	Dr. Donald Helm
North Carolina A&T State University	Dr. Shoou-Yuh Chang
Prairie View A&M University	Dr. Ing Chang
Southern University	Dr. Patrick Carriere
Tennessee State University	Dr. Lonnie Sharpe, Jr.
University Del Turabo	Dr. Roberto Loran
Tuskegee University	Dr Nosa Egiebor

The Chairs have come together to form the Massie Chairs Research Team (MCERT) with a vision to foster cutting-edge, interdisciplinary research projects that address the energy needs relevant to the nation and the individual states where the Chairs reside. The goals of this collaborative research effort are to improve energy efficiency, increase energy production and expand energy development from new, innovative and non-traditional sources.

MCERT research thrust areas include: bio-energy and bio-products, solar power, bioremediation and waste management, hydrogen fuel and fuel cells, energy conservation and control, and sustainable agriculture and natural resources management.

Specific research projects include:

1. Establishing A Test Bed To Develop, Validate And Demonstrate Enabling Technologies For Affordable, Lightweight Composite Wind Turbine Blades.
2. The Development Of Fuel Cells And Fuel Cell Accessories That Will Reduce The Performance Limitations And The Cost Of Today's Fuel Cell Systems.
3. Development Of Alternative Fuels From Low Cost And Sustainable Feedstock With Minimal Impact On The Food Chain.
4. Novel Routes Of Fabricating Microstructures On The Heat Exchangers Of Pressurized Water Reactors (PWRs) Used In Naval Propulsion Systems.
5. Increased Environmental Risk Associated With Alcohol-Fuel Mixes.
6. Converting A Vehicle To Operate On Waste Vegetable Oil (WVO).
7. The Development Of Projects In Clean Energy Technologies Such As Biomass, Solar And Energy Efficiency, Keying In On Business Opportunities Derived Of New Technologies.
8. Ethanol Production From Cellulosic Materials By Catalytic Acid Hydrolysis
9. Production Of Motor Fuels From Biomass Gasification & Fischer-Tropsch Synthesis

NEW RESEARCH OPPORTUNITIES AND ENTREPRENEURIAL APPLICATIONS

The Alternative Energy Consortium will help prepare minority students for a gainful career in the alternative energy production field. This will be accomplished through a collaborative process that includes HBCUs and MSIs, Industry and the Federal government. The effort will concentrate activities on faculty research, curriculum development and student internships and cooperative learning opportunities.

The Consortium will be developed and managed as a public/private partnership with one of the partners serving as the managing partner. The Consortium will develop its mission and operating procedures with the single goal of increasing opportunities in the alternative energy field for individuals who otherwise would have little or no opportunity to participate in this field of endeavor.

There are numerous activities that the Consortium can pursue to meet its goal. First, the Consortium can seek new research and partnership opportunities that are not currently available to minority institutions, or opportunities that minority communities or their supporters have not been able to access. Second, the Consortium can seek opportunities for MCERT and other institutions to serve as the research component for small and mid-sized companies with an interest in alternative energy development but without the financial resources to retain world-class scientists on their payroll. Third, the Consortium can promote green and sustainable development through projects, conferences and other means. Fourth, the Consortium can serve as an information and assistance resource for low-income communities, limited resource farmers and others with an interest in active participation in the alternative energy marketplace. Fifth, the Consortium can support green and sustainable development, and waste management in a

manner that produces new streams of energy. In any case, the Consortium will be an advocate for minority and low-income communities, and others outside the alternative energy arena.

V. Summary and Conclusion

Environmental justice works best when vulnerable communities are able to care for themselves and can determine their own environmental and economic fate.

Environmental justice is best served when a community is environmentally literate and active in environmental decision-making. That combination is the best source for waste management and environmental protection. When the community lacks environmental knowledge or access to trusted technical assistance, it is incumbent on their government to provide the resources to guarantee the community environmental protection.

Since environmental justice means that no population should suffer a disproportionate share of environmental burdens, it logically follows that no population should experience less than its fair share of environmental benefits. That is, as production possibilities turn to more environmentally friendly sources of energy from non-traditional sources, the benefits of such possibilities, when supported by public sources should be shared by all populations.

The Alternative Energy Consortium is a collaboration of non-profit organizations, federal agencies, Historically Black Colleges and Universities and Minority Serving Institutions (HBCU/MSIs), and private sector corporations (energy industry specialists) designed to explore and develop opportunities that empower minorities to own and work in all aspects of the field of alternative energy. The Consortium is a vehicle to diversify the alternative energy production arena and help move America closer to energy independence.